

**T**he 46,000-acre (18,630-ha) Timucuan Ecological and Historic Preserve (the preserve) in Duval County, Florida, was authorized as a National Park System unit in 1988. Unlike typical National Park System units, much of the lands within its boundaries are public lands (state and city parks) or private lands (more than 300 private and corporate owners). The multiple ownership of the preserve requires a management approach that relies greatly on outreach and partnerships, including the management of birds.

Consisting primarily of estuarine ecosystems such as salt, fresh, and brackish waters; marshes; coastal dunes; maritime shrub/scrub; and maritime hammocks, the preserve provides habitat to a diverse array of organisms, including resident and migratory birds (figs. 1 and 2). Birds comprise a major segment of the vertebrate fauna of the biologically diverse preserve, interact at many levels with the estuarine ecosystems, and influence many ongoing resource management activities. The preserve is within the southern breeding limit of many northern bird species and offers habitat for wintering and migrating birds. It also provides refuge for many birds that are increasingly threatened by land development, recreational activities along coastal areas, and other factors.

Preliminary inventory and monitoring projects have been initiated to manage birds and their habitats. (Eakes 1996, Tardona et al. 1997, Tardona et al. 1999). The monitoring of bird species has important implications for the preserve and broadly aids in data collection on migratory species for other agencies and bird observatories. In addition to the benefit gained from the data gathered, the involvement of preserve partners from regional and local communities strengthens and expands support for the preserve's goals.

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# Monitoring painted buntings in the Timucuan Ecological and Historic Preserve:

## p r e l i m i n a r y r e s u l t s

By Daniel R. Tardona

### Painted buntings (*Passerina ciris*)

The Timucuan Preserve contains important habitats for breeding and migratory birds, including painted buntings (*Passerina ciris*, fig. 3). The eastern population's breeding habitat consists of scrub communities and the edges of maritime hammocks adjacent to salt marshes. John James Audubon called this bird "nonpareil" because he viewed it as having no equal. Male painted buntings have a beautiful, tropical-looking, multicolored plumage; female plumage is less multicolored but nonetheless a striking two-tone green. This bunting species is an important bird to monitor in the preserve because some birders visit just to observe this bird. Because it is conspicuous in the pre-



Figures 1 (left) and 2 (above). Timucuan Ecological and Historic Preserve is a vast expanse of salt marsh grasses and waterways, and quiet wooded islands.



Figure 3. Male painted bunting (*Passerina ciris*).

serve, the painted bunting is “showcased” during public educational and interpretive programs focused on the importance of preserve lands for migratory bird species. Nevertheless, this species is listed by Partners in Flight as a species of special concern (Sykes personal communication with author, August 2002; Kaufman 1996) and has been declining at about 4% annually since 1966 based upon breeding bird survey data (Hunter et al. 1993a, Sauer et al. 1997). The cause or causes of this decline are not known but may be associated with fragmentation of eastern forest habitat into isolated patches (Robbins et. al. 1989); loss or significant alteration of optimum breeding habitat (Askins et al. 1990, Askins 1993); brood parasitism by the brown-headed cowbird (*Molothrus ater*) (Brittingham and Temple 1983, Trail and Baptista 1993);

predation by domestic cats, snakes, or rodents; problems on wintering grounds (cage bird trade in Cuba and possibly southern Florida); or other undetermined causes. The survival rate of the southeastern coastal population of the painted bunting is currently unknown. The habitat needs of the painted bunting along with other animals need to be considered when making natural and cultural resource decisions in the preserve.

## Methods

A six-year study of the southeastern population of the painted bunting extending from near Camp Lejeune, North Carolina, along the immediate coast to the St. Johns River in northern Florida is currently in its fifth



year. The principal investigator is Paul W. Sykes, Jr., of the U.S. Geological Survey, Patuxent Wildlife Research Center, in Maryland. The object of this study is to determine annual survival by age and sex using trapping/retrapping and sightings of banded painted buntings throughout the Atlantic coast breeding range. The preserve participates by providing four study sites with two baiting stations at each site (a total of eight feeding stations). Two baiting stations are south of the St. Johns River, one at Ft. Caroline National Memorial and one at the Ribault Monument (fig. 4). All sites were located in prime painted bunting habitat at the interface of salt marsh and maritime hammock forest. Six other baiting stations are north of the St. Johns River—two at Little Talbot Island (part of the Little Talbot Islands State Parks but within the preserve), two on Fort George Island near the grounds of the Kingsley Plantation, and two at Cedar Point. These sites were chosen based upon likelihood of painted bunting presence (prime habitat) and accessibility, and because they were on public lands, thereby better protected and less likely to be disturbed. The bait stations were filled and maintained by preserve staff just before the start of the bunting breeding season each year. The bait stations were removed at the end of each breeding season.

Mist nets are erected surrounding the baiting stations and monitored at each site for half a day. During the breeding season of each year the preserve study sites are systematically sampled in coordination with all the sites along the southeast Atlantic coastal breeding range. Buntings captured in the mist nets are quickly leg-banded with unique color band combinations. Birds are released at the net sites after banding, and age and sex data are recorded. (For more details on the broader project and methods see Sykes, Kendall, and Meyers 2002). Annual survival rates are calculated based on recaptures the following year and on resightings.

## Preliminary results and discussion

Preliminary results of this study show a decreasing trend in captures of painted buntings in the preserve for the past four years. Table 1 shows data for each study area for the years 1999 through 2003. Figure 5 depicts the total counts of individual captured birds in the preserve by year, as well.

The total set of information collected will be essential in determining the demographics for the species in the southeastern United States. These data suggest an apparent decline of the painted bunting population in the preserve and greater region. This information complements other data being collected on reproductive success and

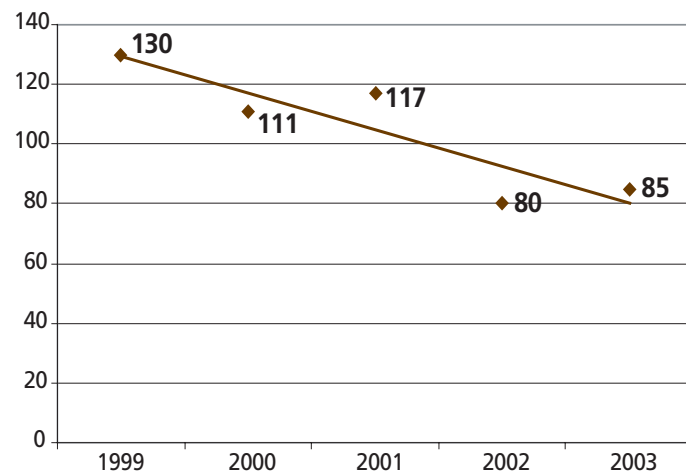


**Figure 4. Bait station located at the edge of a maritime hammock woods and marshland near grounds of Fort Caroline exhibit.**

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**Table 1. Numbers of captured painted buntings in the preserve by year and study area**

Year	Study Areas				Total
	Fort Caroline/ Ribault Monument	Little Talbot Island	Fort George Island	Cedar Point	
1999	4	59	49	18	130
2000	14	49	40	8	111
2001	7	65	27	18	117
2002	3	42	14	21	80
2003	11	25	19	30	85
Total	39	240	149	95	523



**Figure 5. Counts of captured painted buntings in the preserve by year.**

the characteristics of local habitat conditions. All of these data potentially offer clues that facilitate the maintenance of viable populations and assist land managers in making land use and other resource-related decisions. Data gathered by this research will provide opportunities for resource interpreters and educators to provide the public with information about painted buntings and other birds, their habitat, and the threats to their survival. Such education is an important resource management tool.

## Conclusion

Habitats for the painted bunting must be maintained in the preserve because rapid development outside the boundaries is causing habitat to be degraded or lost completely. Data collected from the research project, though preliminary, can be easily and clearly used in public educational programs as well as for management planning and with preserve partners. The monitoring of the painted bunting will continue in the preserve, and data collected may be important to consider in various future preserve management decisions, such as setting priorities for exotic species removal, feral cat control, and other land use decisions. For example, one of the cultural resource areas of the preserve is the Kingsley Plantation on Fort George Island. The Kingsley Family structures and 26 tabby cabins that were the homes of enslaved Africans who worked the plantation are a significant cultural resource. Much of the island was cleared for planting cash crops during the plantation period, but has since been reclaimed by nature. When preserve managers develop a cultural landscape plan, natural habitat, including bunting habitat, may be an important consideration in deciding the extent of landscape change, if any, to some portion of land between the Kingsley Family structures and the slave cabins. Any thinning or clearing of the landscape, if deemed appropriate to approximate the historic landscape, might require sacrificing some painted bunting habitat. Considering the apparent declining population of buntings and the unclear reasons for their decline, how much of an impact, if any, would a landscape restoration have upon bunting habitat and overall population? Weighing and balancing natural and cultural resource values is typically a complicated and difficult task. More data allows for more informed resource management decisions. The preserve's participation in research as outlined in this article is an important contribution to both local and regional resource management planning and public education.

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